

IN THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claims 1-41 (Canceled)

42. (Original) A method of forming a silicon nitride film on a polysilicon film, characterized by the steps of:

forming plasma containing therein hydrogen nitride radicals NH * in a processing vessel of a microwave processing apparatus, said microwave processing apparatus including, in addition to said processing vessel, a shower plate provided in a part of said processing vessel so as to extent parallel with a substrate to be processed, said shower place including a number of apertures for supplying a plasma gas toward said substrate to be processed, and a microwave radiation antenna provided such that said microwave radiation antenna emits a microwave into said processing vessel through said shower plate, said plasma being formed by supplying an inert gas predominantly of Ar or Kr and a gas containing nitrogen and hydrogen into said processing vessel via said shower plate, and by supplying a microwave into said processing vessel from said microwave radiation antenna through said shower plate; and

nitriding, in said processing vessel, a surface of said polysilicon film formed on said substrate by said plasma, to form said silicon nitride film.

43. (Original) A method of forming a silicon nitride film as claimed in claim 42, characterized in that said gas containing nitrogen and hydrogen is an NH₃ gas.

44. (Original) A method of forming a silicon nitride film as claimed in claim 42, characterized in that said gas containing nitrogen and hydrogen is a mixed gas of an N₂ gas and an H₂ gas.

45. (Original) A method of forming a silicon nitride film as claimed in claim 42, characterized in that said plasma has an electron density of 10¹²cm⁻³ or more at said surface of said polysilicon film.

46. (Original) A method of forming a silicon nitride film as claimed in claim 42, characterized in that said plasma has a plasma potential of 10V or less at said surface of said polysilicon film.

Claims 47-50 (Canceled)

51. (Original) A method of forming a silicon oxynitride film as claimed in claim 42, characterized in that said plasma potential of 10V or less at said surface of said polysilicon film.